

August 3, 2006

Mr. Christopher M. Crane  
President and Chief Nuclear Officer  
Exelon Nuclear  
Exelon Generation Company, LLC  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION - NRC INTEGRATED INSPECTION REPORT  
05000461/2006004

Dear Mr. Crane:

On June 30, 2006, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Clinton Power Station. The enclosed inspection report documents the inspection results, which were discussed on July 13, 2006, with Mr. B. Hanson and other members of your staff.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, one self-revealing finding of very low safety significance (Green), which was determined not to involve a violation of NRC requirements, was identified.

If you contest any Non-Cited Violation (NCV) in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Clinton Power Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS), accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Mark A. Ring, Chief  
Branch 1  
Division of Reactor Projects

Docket No. 50-461  
License No. NPF-62

Enclosure: Inspection Report No. 05000461/2006004  
w/Attachment: Supplemental Information

cc w/encl: Site Vice President - Clinton Power Station  
Plant Manager - Clinton Power Station  
Regulatory Assurance Manager - Clinton Power Station  
Chief Operating Officer  
Senior Vice President - Nuclear Services  
Vice President - Operations Support  
Vice President - Licensing and Regulatory Affairs  
Manager Licensing - Clinton Power Station  
Senior Counsel, Nuclear, Mid-West Regional Operating Group  
Document Control Desk - Licensing  
Assistant Attorney General  
Illinois Emergency Management Agency  
State Liaison Officer, State of Illinois  
Chairman, Illinois Commerce Commission

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS), accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Mark A. Ring, Chief  
Branch 1  
Division of Reactor Projects

Docket No. 50-461  
License No. NPF-62

Enclosure: Inspection Report No. 05000461/2006004  
w/Attachment: Supplemental Information

cc w/encl: Site Vice President - Clinton Power Station  
Plant Manager - Clinton Power Station  
Regulatory Assurance Manager - Clinton Power Station  
Chief Operating Officer  
Senior Vice President - Nuclear Services  
Vice President - Operations Support  
Vice President - Licensing and Regulatory Affairs  
Manager Licensing - Clinton Power Station  
Senior Counsel, Nuclear, Mid-West Regional Operating Group  
Document Control Desk - Licensing  
Assistant Attorney General  
Illinois Emergency Management Agency  
State Liaison Officer, State of Illinois  
Chairman, Illinois Commerce Commission

DOCUMENT NAME:E:\Filenet\ML062150271.wpd

☐ Publicly Available

☐ Non-Publicly Available

☐ Sensitive

☐ Non-Sensitive

To receive a copy of this document, indicate in the concurrence box "C" = Copy without attach/encl "E" = Copy with attach/encl "N" = No copy

OFFICE	RIII		RIII		RIII		RIII	
NAME	MRing:sls							
DATE	08/03/2006							

OFFICIAL RECORD COPY

ADAMS Distribution:

DXC1

KNJ

RidsNrrDirslrib

GEG

KGO

BCD

CAA1

LSL (electronic IR's only)

C. Pederson, DRS (hard copy - IR's only)

DRPIII

DRSIII

PLB1

TXN

[ROPreports@nrc.gov](mailto:ROPreports@nrc.gov) (inspection reports, final SDP letters, any letter with an IR number)

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-461

License No: NPF-62

Report No: 05000461/2006004

Licensee: AmerGen Energy Company, LLC

Facility: Clinton Power Station

Location: Clinton, IL

Dates: April 1 through June 30, 2006

Inspectors: B. C. Dickson, Senior Resident Inspector  
D. Tharp, Resident Inspector

Approved by: Mark Ring, Chief  
Branch 1  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000461/2006004; AmerGen Energy Company LLC, 04/01/2006-06/30/2006; Clinton Power Station; Event Follow-up.

This report covers a 3-month period of baseline resident inspection. The inspection was conducted by the resident inspectors. One Green finding was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, Significance Determination Process (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### A. NRC-Identified and Self-Revealing Findings

#### Cornerstone: Initiating Events

- Green. On March 20, 2006, a finding of very low safety significance was self-revealed during an event. Clinton experienced a reactor scram due to a generator trip/lock out caused by an actuation of the generator differential overcurrent relay as a result of an open circuit on the C phase of the generator output current transformer. The open circuit was caused by burnt wires that resulted from inadequate workmanship, leaving terminal screws loose, following testing performed during the refueling outage in April 2002. The licensee checked all of the screws in the current transformer circuitry to ensure no others were loose, and implemented a temporary configuration change to remove the damaged phase from the circuitry. The licensee has scheduled replacement of the circuitry during the next refueling outage.

The finding was more than minor because it affected the Reactor Safety/Initiating Events cornerstone objective of limiting the likelihood of those events that upset plant stability. The finding was of very low safety significance because it did not affect the availability or function of mitigating systems. No violation of NRC requirement occurred. (Section 4OA3)

### B. Licensee-Identified Violations

No findings of significance were identified.

## REPORT DETAILS

### Summary of Plant Status

The plant operated at approximately 96 percent rated thermal power (maintaining 104 percent electrical output) throughout the inspection period, with one brief reduction in power on May 21, 2006, to 79 percent, for a control rod sequence exchange.

### 1. REACTOR SAFETY

#### **Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity**

#### 1R04 Equipment Alignment (71111.04)

##### .1 Partial Walkdowns

##### a. Inspection Scope

The inspectors performed partial walkdowns of accessible portions of divisions of risk-significant mitigating systems equipment during times when the divisions were of increased importance due to the redundant divisions or other related equipment being unavailable. The inspectors utilized the valve and electric breaker checklists listed in the Attachment to verify that the components were properly positioned and that support systems were lined up as needed. The inspectors also examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors reviewed outstanding work orders and issue reports associated with the divisions to verify that those documents did not reveal issues that could affect division function. The inspectors used the information in the appropriate sections of the updated safety analysis report to determine the functional requirements of the systems. The documents listed at the end of this report were also used by the inspectors to evaluate this area. The inspectors performed four samples by verifying the alignment of the following divisions:

- Division 2 emergency diesel generator and support systems;
- Division 2 shutdown service water system;
- Division 1 essential switchgear cooling system; and
- Standby liquid control system following maintenance and testing.

##### b. Findings

No findings of significance were identified.

##### .2 Complete Walkdown

##### a. Inspection Scope

The inspectors conducted a complete system alignment inspection of the reactor core isolation cooling system. This system was selected based on its high risk significance

and mitigating systems function. The inspectors reviewed plant procedures, drawings, and the updated safety analysis report to identify proper system alignment and visually inspected system valves, instrumentation, and electrical supplies to verify proper alignment, component accessibility, availability, and current material condition. The inspectors also completed a review of corrective action documents, work orders, and operator work around and challenges to ensure there were no current operability concerns with the system. Documents reviewed during this inspection are listed in the Attachment. These activities completed one inspection sample.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of fire fighting equipment, the control of transient combustibles and ignition sources, and on the condition and operating status of installed fire barriers. The inspectors selected fire areas for inspection based on their overall contribution to internal fire risk, as documented in the individual plant examination of external events with later additional insights, their potential to impact equipment which could cause a plant transient, or their impact on the licensee's ability to respond to a security event. The inspectors used the documents listed at the end of this report to verify that fire hoses and extinguishers were in their designated locations and available for immediate use, that fire detectors and sprinklers were not obstructed, that transient material loading was within the analyzed limits, and that fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors verified that minor issues identified during the inspection were entered into the licensee's corrective action program.

The inspectors reviewed portions of the licensee's fire protection evaluation report and the updated safety analysis report to verify consistency in the documented analysis with installed fire protection equipment at the station.

The inspectors completed seven samples by inspection of the following areas:

- Fire zone F-1m, fuel building elevation 737' 0" general access;
- Fire zone F-1a, fuel building elevation 712' 0" general access;
- Fire zone F-1b, fuel building elevation 712' 0" high pressure core spray room;
- Fire zone T-1a, turbine building elevation 712' 0" general access;
- Fire zone T-1b, condensate booster pump room;
- Fire zone CB-5a, division 3 essential switch gear area; and
- Fire zone CB-6a, control building elevation 800' 0" main control room complex.

b. Findings

No findings of significance were identified.



## 1R06 Flood Protection Measures (71111.06)

### .1 Internal Flooding

#### a. Inspection Scope

The inspectors verified that flooding mitigation plans and equipment were consistent with the design requirements and risk analysis assumptions. The inspectors reviewed the updated safety analysis report section 3.4.1 for internal flooding events and reviewed condition reports and work orders to complete one inspection sample on the following:

- Low pressure core spray room

#### b. Findings

No findings of significance were identified.

## 1R11 Licensed Operator Regualification Program (71111.11)

### .1 Resident Inspector Quarterly Review

#### a. Inspection Scope

The inspectors reviewed licensed-operator requalification training to evaluate operator performance in mitigating the consequences of a simulated event, particularly in the areas of human performance. The inspectors evaluated operator performance attributes which included communication clarity and formality, timely performance of appropriate operator actions, appropriate alarm response, proper procedure use and adherence, and senior reactor operator oversight and command and control.

Crew performance in these areas was compared to licensee management expectations and guidelines as presented in the following documents:

- FE-LOR-47, Electro Hydraulic Control Leak, Reactor Scram, and Anticipated Transient Without Scram;
- OP-AA-101-111, Roles and Responsibilities of On-Shift Personnel, Revision 0;
- OP-AA-103-102, Watchstanding Practices, Revision 2;
- OP-AA-104-101, Communications, Revision 1; and
- OP-AA-106-101, Significant Event Reporting, Revision 2.

The inspectors also assessed the performance of the training staff evaluators involved in the requalification process. For any weaknesses identified, the inspectors observed that the licensee evaluators also noted the issues and discussed them in the critique at the end of the session. The inspectors verified all issues were captured in the training program and licensee corrective action process.

These activities completed one inspection sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q)

a. Inspection Scope

The inspectors reviewed the effectiveness of the licensee's maintenance efforts in implementing 10 CFR 50.65 (the maintenance rule (MR)) requirements, including a review of scoping, goal-setting, performance monitoring, short and long-term corrective actions, and current equipment performance problems. These systems were selected based on their designation as risk-significant under the maintenance rule, or being in the increased monitoring (MR category (a)(1)) group. In addition, the inspectors interviewed the system engineers and maintenance rule coordinator. The inspectors also reviewed condition reports and associated documents for appropriate identification of problems, entry into the corrective action system, and appropriateness of planned or completed actions. The documents reviewed are listed at the end of the report. The inspectors completed two samples by reviewing the following:

- Division 3 essential switchgear room cooling system; and
- Containment monitoring system.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors observed the licensee's risk assessment processes and considerations used to plan and schedule maintenance activities on safety-related structures, systems, and components, particularly to ensure that maintenance risk and emergent work contingencies had been identified and resolved. The inspectors completed seven samples by assessing the effectiveness of risk management activities for the following work activities or work weeks:

- Reviewed licensee's risk assessment for the high pressure core spray surveillance testing in-coincidence with reactor recirculation B hydraulic power unit filter change-out and P850 annunciator power supply replacement;
- Reviewed licensee's risk assessment for upcoming standby liquid control pump maintenance;
- Reviewed licensee's risk assessment for work week schedule including a control room ventilation system outage, off-gas drain trap troubleshooting, and control rod drive pump maintenance;
- Reviewed the licensee's online risk assessment following entry into technical specification limiting condition for operation section 3.8.1 for failed power supply in the reserve auxiliary transformer interface panel;

- Reviewed licensee's risk assessment for division 2 essential switch gear cooling being out of service due to planned cooler maintenance;
- Reviewed licensee's work schedule and risk assessment for upcoming surveillance and maintenance activities on the reactor core isolation cooling system; and
- Reviewed licensee's risk assessment of planned maintenance activities while experiencing pressure oscillations on discharge of the electro hydraulic control system.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following operability determinations and evaluations affecting mitigating systems to determine whether operability was properly justified and the component or system remained available such that no unrecognized risk increase had occurred. The inspectors completed seven samples of operability determinations and evaluations by reviewing the following:

- Operability assessment contained in issue reports 489591 and 491717, regarding reactor core isolation cooling's failure at low speed/low flow operation;
- Operability assessment contained in issue report 487662, safety system annunciator power supply 1H13-P630 degraded;
- Disposition of three NRC identified issues related to high pressure core spray; issue report 483115, seal wire separated for relief valve 1E22-F035, and issue report 487297, high pressure core spray acceptance criteria;
- Licensee's issue reports to assess the operability of the drywell floor drain system. Issue reports included: 496091, 1RF04T Hi-Hi Level alarm comes in before 1RF04PA starts; 482772, CPS 9543.09 Failed to work as written; and 484621, Incorrect counter number recorded during the performance of CPS 9543.10, Drywell Floor Drain Sump Level (1E31- N764) Channel Functional Test;
- Operability evaluation 472259-02 for reactor water level setpoint calculations cause inaccurate automatic trip module settings;
- Operability evaluation 491911 for divisions 1 and 3 essential switchgear cooling unit, wrong code classification for condensing unit drain piping; and
- Operability evaluation 501926 for control room ventilation damper 0VC09YB, cracked weld on crank arm to blade shaft.

b. Findings

No findings of significance were identified.

## 1R19 Post Maintenance Testing (71111.19)

### a. Inspection Scope

The inspectors reviewed the post maintenance testing activities associated with maintenance or modification of important mitigating, barrier integrity, and support systems that were identified as risk significant in the licensee's risk analysis. The inspectors reviewed these activities to verify that the post maintenance testing was performed adequately, demonstrated that the maintenance was successful, and that operability was restored. During this inspection activity, the inspectors interviewed maintenance and engineering department personnel and reviewed the completed post maintenance testing documentation. The inspectors used the appropriate sections of the technical specifications and updated safety analysis report, as well as the documents listed at the end of this report, to evaluate this area.

Testing subsequent to the following activities was observed and evaluated to complete three inspection samples:

- 4160 volt bus 1B1 sync-check relay after adjustment of the calibration of the emergency reserve auxiliary transformer relay;
- Reactor core isolation cooling system troubleshooting after failing the in-service inspection portion of its quarterly surveillance; and
- Control room ventilation train A, hydramotor replacements and preventative maintenance.

### b. Findings

No findings of significance were identified.

## 1R22 Surveillance Testing (71111.22)

### a. Inspection Scope

The inspectors witnessed selected surveillance tests and/or reviewed test data to verify that the equipment tested using the surveillance procedures met the technical specifications, the operations requirements manual, the updated safety analysis report, and licensee procedural requirements, and demonstrated that the equipment was capable of performing its intended safety functions. The activities were selected based on their importance in verifying mitigating systems capability and barrier integrity. The inspectors used the documents listed at the end of this report to verify that the testing met the frequency requirements; that the tests were conducted in accordance with the procedures, including establishing the proper plant conditions and prerequisites; that the test acceptance criteria were met; and that the results of the tests were properly reviewed and recorded. In addition, the inspectors interviewed operations, maintenance and engineering department personnel regarding the tests and test results.

The inspectors completed two samples of reactor coolant system leakage detection surveillances by evaluating the following activities:

- CPS 9000.01D001, Control Room Surveillance Log Mode 1, 2, 3 Data Sheet, section 8.9, Reactor Coolant System - Operational Leakage; and
- CPS 9543.01, Drywell Equipment Drain Sump Flow 1E31-N766 Channel Functional.

The inspectors completed five samples of in-service testing activities by evaluating the following surveillance tests:

- CPS 9051.02, High Pressure Core Spray Valve Operability Test;
- CPS 9054.01, Reactor Core Isolation Cooling System Operability Check;
- CPS 9069.01, Shutdown Service Water Operability Test;
- CPS 9051.01, High Pressure Core Spray Pump and High Pressure Core Spray Water Leg Pump Operability; and
- CPS 9015.01, Standby Liquid Control System Operability.

b. Findings

No findings of significance were identified.

**Cornerstone: Emergency Preparedness**

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed the emergency response activities associated with the drill conducted on May 23, 2006. Specifically, the inspectors verified that the emergency classification and simulated notifications were properly completed, and that the licensee adequately critiqued the training. Additionally, the inspectors observed licensee activities during the drill in the new technical support center, and attended the post-drill critique. The inspectors discussed drill discrepancies with the emergency preparedness manager. The inspectors completed one inspection sample by observing the following emergency drill:

- High drywell pressure and lowering reactor pressure vessel level.

b. Findings

No findings of significance were identified.

#### 4. OTHER ACTIVITIES

##### 4OA1 Performance Indicator Verification (71151)

###### **Cornerstone: Initiating Events**

###### a. Inspection Scope

The inspectors sampled the licensee's submittals for performance indicators for the period of April 2004 through March 2006. The inspectors used performance indicator definitions and guidance contained in revision 4 of Nuclear Energy Institute (NEI) document 99-02, "Regulatory Assessment Performance Indicator Guideline" to verify the accuracy of the performance indicator data. The inspectors performed three samples by reviewing the following:

- Scrams with Loss of Normal Heat Removal;
- Unplanned Scrams per 7,000 Critical Hours; and
- Unplanned Power Changes per 7,000 Critical Hours.

###### b. Findings

No findings of significance were identified.

##### 4OA2 Identification and Resolution of Problems (71152)

###### a. Inspection Scope

As discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action system at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Minor issues entered into the licensee's corrective action system as a result of inspectors' observations are generally denoted in the report.

###### b. Findings

No findings of significance were identified.

##### 4OA3 Event Follow-up (71153)

- .1 (Closed) Licensee Event Report 05000461/2006-01: Failure to tighten terminal screw causes turbine/generator trip and reactor scram.

###### a. Inspection Scope

The inspectors reviewed the licensee event report and issue report 468357, which documented this event in the corrective action program, to verify that the cause of the

event was identified and to verify that the corrective actions addressed the root cause of this event.

b. Findings

Introduction: A self-revealed Green finding was identified when a loose terminal screw on the C phase neutral current transformer of the main generator output caused the generator differential overcurrent 87-G1 relay to trip due to a sensed current imbalance resulting in a turbine/generator trip and reactor scram.

Description: On March 20, 2006, Clinton experienced a reactor scram due to an open circuit in the C phase neutral current transformer of the main generator output. This open circuit caused the generator differential overcurrent 87-G1 relay to trip due to a sensed current imbalance. Actuation of the 87-G1 relay resulted in a generator trip/lockout and an automatic turbine electro hydraulic control trip. The turbine electro hydraulic control trip caused a turbine control valve fast closure and a reactor protection signal for the automatic scram. The licensee's troubleshooting team traced the open circuit on the C phase neutral current transformer to a junction box under the main generator. The licensee determined that the open circuit was likely due to a loose terminal screw on the current transformer lead wire. This loose screw resulted in high resistance and overheating of the wire. The licensee implemented a temporary modification, TCCP# 360128, to remove the failed current transformer and disable the input to the 87-G1 relay. A permanent repair/replacement was planned for the next refueling outage.

The licensee conducted a root cause investigation to determine why the terminal screw was loose on the current transformer. Vibration was ruled out because vibration appeared to be low in the junction boxes and the friction in the terminals was significant. During the investigation, only 3 of the 60 screws in the current transformer systems were found to be backed-off. The root cause team was unable to identify a specific work activity that caused the loose screw, but determined that inadequate workmanship was the cause of the loose screw. The licensee checked all of the current transformer circuits for loose screws. The screw that caused the event and two others on the same circuit were the only screws found loose on the current transformer circuits. The licensee determined this condition was caused by a task that involved temporary shorting of the circuit during testing, and when the test leads were removed, the loose screws were not re-tightened adequately. Through a work history search, the licensee determined the most likely time for the screws to be left loose was during hi-pot testing on April 25, 2002, performed under work order 332675. The licensee's review of these work documents revealed that site procedures were probably not followed in this activity since there were no lifted and landed leads forms in the work package and no specific steps to ground the current transformer leads. Licensee interviews of General Electric (GE) personnel and review of GE procedures indicated that current transformer grounding was required for hi-pot testing, although there was no documentation showing that this was done. The licensee created a corrective action to revise the pre-outage checklist to require verification that all lifted and landed leads activities in support of GE work are properly added to the work order packages and to require briefing workers before the outage begins to reinforce the expectations on lifted and landed leads work.



Analysis: The inspectors considered the failure to adequately tighten terminal screws in the main generator output current transformer circuit a performance deficiency. This issue was caused by inadequate workmanship. The inspectors used IMC 0612, Appendix B, to disposition this issue and determined it was more than minor because the finding affected the reactor safety/initiating events cornerstone objective of limiting the likelihood of those events that upset plant stability. The finding also affected the cross-cutting area of human performance because the contract workers failed to tighten the terminal screws of the current transformer and the licensee failed to ensure the GE workers were using the appropriate lifted and landed leads documents to aid in performance of this job. Although this failure occurred in C1R08 in April, 2002, the inspectors determined this deficiency to be reflective of recent licensee performance because, up to the March 2006 scram event, there was no procedure or process in place to ensure GE followed the licensee's lifted and landed lead procedures. As a result of the root cause for this event, the licensee initiated a corrective action to revise the GE quality control check-list to confirm that requirements similar to wire removal/jumper installation procedures are incorporated. The inspectors evaluated this finding using IMC 0609, "Significance Determination Process," Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," Phase 1 screening associated with the initiating events cornerstone. Although this finding did contribute to the likelihood of a reactor trip, it did not affect the function or availability of any mitigation equipment. Therefore, the inspectors concluded that this issue was a finding of very low safety significance (Green).

Enforcement: Though the inadequate workmanship that occurred during generator high-potential testing was a performance deficiency, no violation of regulatory requirements occurred. This issue was considered a finding of very low safety significance (**FIN 05000461/2006004-01**). This issue was documented in the licensee's corrective action program as issue report 468357, Reactor Scram Due to Main Turbine/Generator Trip.

#### 4OA6 Meetings

##### .1 Exit Meeting

The inspectors presented the inspection results to Mr. B. Hanson and other members of licensee management at the conclusion of the inspection on July 13, 2006. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION



## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee personnel

B. Hanson, Site Vice President  
M. McDowell, Plant Manager  
J. Cunningham, Work Management Director  
J. Stovall, Outage Manager  
G. Vickers, Radiation Protection Director  
R. Frantz, Regulatory Assurance Representative  
M. Hiter, Access Control Supervisor  
P. Simpson, Regulatory Assurance Director (Acting)  
C. Vandenberg, Nuclear Oversight Manager  
J. Domitrovich, Maintenance Director  
D. Schavey, Operations Director  
R. Campbell, Chemistry Manager (Acting)  
J. Lindsay, Training Manager  
C. Williamson, Security Manager  
R. Peak, Site Engineering Director  
T. Chalmers, Shift Operations Superintendent

### **LIST OF ITEMS OPENED, CLOSED AND DISCUSSED**

#### Opened and Closed

05000461/2006004-01	FIN	Failure to tighten terminal screw causes turbine/generator trip and reactor scram due to inadequate workmanship.
05000461/2006-01	LER	Failure to tighten terminal screw causes turbine/generator trip and reactor scram.

#### Discussed

None.

## LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

### 1R04 Equipment Alignment

CPS 3310.01, Reactor core isolation cooling; Revision 26  
CPS 9054.06, Reactor core isolation cooling discharge header filled and flow path verification, and flow controller checks, Revision 26  
CPS 3310.01E001, Reactor core isolation cooling electrical lineup; Revision 14a  
CPS 3310.01V001, Reactor core isolation cooling valve lineup; Revision 12b  
CPS 3310.01V002, Reactor core isolation cooling instrument valve lineup; Revision 9c  
IR 351734, Extended reactor core isolation cooling unavailability caused by 1E51-F030 testing; July 11, 2005  
IR 351748, Suction line partially drained vs. depressurized for 9054.02; July 11, 2005  
IR385877, E51-R564 over ranged during 9054.02, October 13, 2005  
CPS 3211.01, Shutdown service water; Revision 24d  
CPS 3211.01V001, Shutdown service water valve lineup; Revision 25a  
CPS 3211.01V002, Shutdown service water instrument valve lineup; Revision 9  
CPS 3211.01E001, Shutdown service water electrical lineup; Revision 17d  
IR 450342, C1R10LL enhancement issue for configuration control; February 06, 2006  
IR 466060, Configuration control performance indicator below goal; March 14, 2006  
IR 484037, Potential trend - configuration control; April 27, 2006  
CPS 3506.01P002, Division 2 diesel generator operations; Revision 0e  
CPS 3506.01V001, Diesel generator and support systems valve lineup; Revision 13a  
CPS 3506.01V002, Diesel generator and support systems instrument valve lineup; Revision 11b  
CPS 3506.01E001, Diesel generator and support systems electrical lineup; Revision 18a  
CPS 3403.01E001, Diesel generator heating ventilation and air conditioning electrical lineup; Revision 7a  
CPS 3314.01E001, Standby liquid control electrical lineup; Revision 9a  
CPS 3314.01V001, Standby liquid control valve lineup; Revision 10

### 1R05 Fire Protection

Updated safety analysis report appendix E section 3.6.1.12 fire zone F-1m, elevation 737'0" general access area  
Updated safety analysis report figure FP-3a, fire zone boundaries auxiliary, fuel building and containment grade floor plan - elevation 737'0"  
Updated safety analysis report figure FP-3b, fire protection features auxiliary, fuel building and containment grade floor plan - elevation 737'0"  
Updated safety analysis report appendix E section 3.6.1.1 fire zone F-1a, elevation 712'0" general access area  
Updated safety analysis report figure FP-2a, fire zone boundaries auxiliary, fuel building and containment basement floor plan - elevation 707'6" & 712'0"

Updated safety analysis report figure FP-2b, fire protection features auxiliary, fuel building and containment basement floor plan - elevation 707'6" & 712'0"

#### 1R06 Flood Protection

CPS 4304.01, Flooding, Revision 4d

CPS 3219.01, Containment, auxiliary building, fuel building floor drain (RF), Revision 7

Dwg M05-1047, Sheet 004, auxiliary building drain system, Revision N

Dwg M05-1047, Sheet 005, auxiliary building drain system, Revision M

IR 335246, ISDI-22 North east residual heat removal 'A' pump room water tight door lock not working, May 14, 2005

#### 1R15 Operability Evaluations

IR 472259, Reactor water level setpoint calculations cause inaccurate automatic trip module settings; March 29, 2006

IR 474947, Nonconformance of reactor water level trip calibration procedures to calculations; April 4, 2006

Operability evaluations 472259-02, Reactor water level setpoint calculations cause inaccurate automatic trip module settings; April 7, 2006

CPS 9030.01C006, Reactor core isolation cooling reactor water level B21-N692A (E, B, F) checklist; Revision 25d

IR 488902, Reactor core isolation cooling pump flow higher than acceptable range; May 10, 2006

WO 921023, 1E51C002, Change reactor core isolating cooling turbine oil and filters; May 13, 2006

AR 00484039; NRC Identified housekeeping concern and component label issues

AR 00489809; EGR brought for emergent reactor core isolation cooling work needs modification

AR 00489703; Post maintenance testing failure on reactor core isolation cooling turbine oil filter leak

AR 00489591; Reactor core isolation cooling flow out of band high

AR 00491717; NRC question on reactor core isolation cooling turbine troubleshooting

AR 00502700; NRC questions on reactor core isolation cooling GOV valve

#### 1R19 Post Maintenance Testing

CPS 8501.06, CVE and CVE-1 relay inspection, calibration with Doble test equipment; Revision 3

WO 807766, Test bus 1B1 main feed synch-check relay 1AP09E; May 18, 2006

WO 871872, Electrical maintenance calibrate bus 1B1 reserve feeder breaker synch-check relay (225-221B1) 1AP09EC; May 18, 2006

IR 491522, Synch-check relay 225-221B1 Time test out of specification high, Out of tolerance; May 18, 2006

WO 921232, Inspect/clean torque switch and limits switch contacts/wiring; May 12, 2006

WO 921024, Perform adjustment to governor valve per EPRI guide/vendor manual; May 13, 2006

IR 488902, Reactor core isolation cooling pump flow higher than acceptable range; May 10, 2006

WO 921023, 1E51C002, Change reactor core isolating cooling turbine oil and filters;  
May 13, 2006  
CPS 9054.01C002, Reactor core isolation cooling high pressure operability checks; Revision 1c  
IR 489305, Reactor core isolation cooling 1E51-C002 motor operated valve will not stroke shut;  
May 11, 2006  
IR 489591, Reactor core isolation cooling flow out of band high; May 12, 2006  
WO 72604202, Electrical maintenance post maintenance testing control room ventilation  
system train A damper 04YA; May 2, 2006  
WO 81371302, Electrical maintenance hydramotor periodic maintenance and calibration,  
1SX019A; May 1, 2006  
WO 86804902, Electrical maintenance post maintenance testing control room ventilation system  
train A damper 09YA; May 2, 2006  
WO 86805804, Electrical maintenance post maintenance testing control room ventilation  
system train A damper 30YA; May 3, 2006  
MA-CL-725-5611, Hydramotor actuator - model AH95 and NH95 preventive maintenance;  
Revision 3  
ASCO Installation and maintenance instruction NH90 series hydramotor actuators model B &  
model B1; Revision 0

#### 1R22 Surveillance Testing

CPS 9051.02D001, High pressure core spray valve operability test; Revision 38d  
CPS 9051.02D001, High pressure core spray valve operability data sheet; Revision 35c

## LIST OF ACRONYMS USED

ADAMS	Agency wide Documents Access and Management System
FIN	Finding
GE	General Electric
IMC	Inspection Manual Chapter
MR	Maintenance Rule
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
RT	Reactor Water Cleanup
SDP	Significant Determination Process